

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 30

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SHINRI SAKAI and MASAHIRO FUJII

Appeal No. 1999-1854
Application No. 08/633,616

HEARD: MAY 4, 2000

Before JERRY SMITH, RUGGIERO, and LALL, Administrative Patent Judges.

RUGGIERO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-21, all of the claims pending in the present application. An amendment after final rejection filed

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August 31, 1998 was entered by the Examiner.

The claimed invention relates to a method and apparatus for suppressing residual ink vibration after ink droplet ejection from an ink jet printing head. More particularly, Appellants indicate at pages 3 and 4 of the specification that the residual vibrations in the deformable diaphragms used to expel ink from a nozzle are dampened by applying a secondary driving signal at a preselected period of time after the primary ejection drive signal has been transmitted.

Claim 1 is illustrative of the invention and reads as follows:

1. An ink jet head, comprising:
 - an ink nozzle for ejecting ink drops;
 - an ink chamber having at least one wall and a volume and extending into communication with said ink nozzle for storing ink;
 - an elastic diaphragm formed in said at least one wall of said ink chamber;
 - a diaphragm drive circuit connected to said diaphragm to selectively deform said diaphragm and alter the volume of said ink chamber;
 - a substantially stationary wall disposed externally to said ink chamber opposing said diaphragm and a gap separating said stationary wall from said diaphragm when said diaphragm is not deformed;
 - a signal generator in communication with said diaphragm drive circuit for applying a charge signal and a first discharge signal to said diaphragm drive circuit to eject an ink drop from said nozzle;
 - a timer in communication with said signal generator for timing a predetermined interval after application of said charge signal; and wherein

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charge said signal generator applies a subsequent
displace signal after said predetermined interval to
wall to said diaphragm to contact said stationary
after reduce residual vibration in said diaphragm
 application of said charge signal.

The Examiner relies on the following prior art:

Fujii et al. (Fujii)	629,503	Dec. 21, 1994
(European Patent)		

Claims 1-21 stand finally rejected under 35 U.S.C. §
102(b) as being anticipated by Fujii.

Rather than reiterate the arguments of Appellants and the
Examiner, reference is made to the Briefs¹ and Answer for the
respective details.

OPINION

We have carefully considered the subject matter on
appeal, the rejection advanced by the Examiner and the
evidence of anticipation relied upon by the Examiner as
support for the rejection. We have, likewise, reviewed and
taken into consideration, in reaching our decision,
Appellants' arguments set forth in the Briefs along with the

¹ The Appeal Brief was filed November 6, 1998. In
response to the Examiner's Answer dated February 16, 1999, a
Reply Brief was filed April 19, 1999 which was acknowledged by
the Examiner without further comment on January 12, 2000.

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Examiner's rationale in support of the rejection and arguments
in rebuttal set forth in the Examiner's Answer.

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It is our view, after consideration of the record before us, that the disclosure of Fujii does not fully meet the invention as set forth in claims 1-21. Accordingly, we reverse.

Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.); cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore and Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

The Examiner, in making the 35 U.S.C. § 102(b) rejection, has grouped all of the appealed claims 1-21 together, and attempts to correlate (Answer, page 3) various structural features of Fujii with the various limitations of the appealed claims. In response, Appellants assert (Reply Brief, page 1) that the Examiner has failed to address several claimed

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limitations which are not disclosed by the Fujii reference, an assertion with which we agree.

Contrary to the Examiner's contention at page 4 of the Answer that only a signal generator in communication with a diaphragm drive circuit and timer is being claimed, it is apparent from a reading of the language of the claims on appeal that a specific charge/discharge/subsequent charge sequence performed by the claimed timer and signal generator is set forth. Our reviewing courts have held that, in assessing patentability of a claimed invention, all the claim limitations must be suggested or taught by the prior art. In re Royka, 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

We note that a relevant portion of independent claim 1 recites:²

said signal generator applies a subsequent charge signal after said predetermined interval to displace said diaphragm to contact said

² Similar recitations appear in claims 9, 13, and 21, the other independent claims on appeal.

stationary wall ...

After careful review of the Fujii reference in light of the arguments of record, we agree with Appellants that no such feature is disclosed by Fujii. To the contrary, in a direct contradiction of Appellants' recited stationary wall contact feature, Fujii discloses at page 4, lines 47-50 the following:

The present invention provides a control of the charging process of the actuator whereby either the duration or the voltage of the drive pulses applied to the electrostatic actuator is set to a value or controlled such that the diaphragm does not touch the nozzle electrode even if the gap length between the diaphragm and the nozzle electrode is extremely small (emphasis added).

Further, we find the Examiner's suggestion (Answer, page 4) as to the inherency of the claimed feature of subsequent charge application resulting in the diaphragm contacting the stationary wall to be unfounded. To establish inherency, evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference and would be recognized as such by persons of ordinary skill. In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) citing Continental Can Co. v. Monsanto Co., 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991).

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"Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Id. citing Continental, 948 F.2d at 1269, 20 USPQ2d at 1749. It is our view that Fujii's express intention to avoid contact between the diaphragm and the stationary wall renders unpersuasive any argument as to the inherency of Fujii's structure providing such a stationary wall contact feature.

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For the above reasons, it is our opinion that, since all of the claimed limitations are not disclosed by Fujii, the Examiner's 35 U.S.C. § 102(b) rejection of independent claims 1, 9, 13, and 21, as well as claims 2-8, 10-12, and 14-20 dependent thereon, cannot be sustained. Therefore, the decision of the Examiner rejecting claims 1-21 is reversed.

REVERSED

JERRY SMITH)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
JOSEPH F. RUGGIERO)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
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REVERSED

Prepared: June 22, 2001